

I claim:

1. A stringed instrument of the violin family, said instrument having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, a bridge, playing strings played with a bow to provide musical vibrations, a sound post, a bass bar, a tailpiece, and end means, wherein improvement comprise,
 - a) a harmonic device comprising a member mounted in position as a tailpiece and said member including receptacles for receiving respective ones of said playing strings;
 - 10 b) string adjusters on said member for respectively engaging and adjusting said strings;
 - c) at least one flexible wire that is relatively heavy in comparison to said playing strings;
 - d) the ends of said at least one relatively heavy flexible wire being affixed to said string receiving member, and
 - 15 e) said at least one wire being fastened to said endpin means for carrying sound vibrations from said member to said endpin means which recycles the vibrations back into the violin body to thereby add to and amplify string vibrations,
- 20 thereby enabling the violin playing strings to vibrate with reduced bowing effort

while enabling an increase in dominance, in distance of sound projection and capability to resonate to thus improve and amplify the sound produced by the violin.

2. Apparatus as in claim 1 wherein said flexible wire comprises a
5 relatively heavy guitar wire of about 56 gauge and said wire is fastened to
said endpin means by looping said wire around said end pin means.

3. Apparatus as in claim 1 wherein the weight of the string
receiving member of the harmonic device is of a light weight in the proximity
10 of 1.25 ounces.

4. A violin as in claim 1 wherein said heavy musical string ends
are the ends of a single musical string that is looped around said end pin
means to form an attaching loop.

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5. Apparatus as in claim 1 wherein said member for said harmonic
device comprises a relatively light weight.

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6. Apparatus as in claim 1 wherein said harmonic device
comprises a plurality of members.

7. Apparatus as in claim 1 wherein said string receiving member comprises two separate pieces, each of said pieces receiving two playing strings, and end of said heavy musical string being attached to respective 5 ones of said pieces.

8. Apparatus as in claim 1 wherein said member comprises four separate pieces one for each playing string, a relative heavy musical string having an end attached to each of said pieces, an end at first musical string 10 being attached to respective ones of said higher frequency strings, and end of a second musical string being attached to respective ones of said lower frequency strings, and the loops formed by said musical strings being looped around said end pin means.

15 9. A harmonic device for a stringed instrument of the violin family wherein said instrument includes a body, strings played by a bow to vibrate and produce musical tones, a tailpiece, and end pins means, said harmonic device comprising

- 20 a) a playing string receiving member positioned as a tailpiece;
- b) receptacles in said member for receiving respective ones of said

playing strings;

- c) string adjusters on said member for respectively engaging and adjusting said playing strings;
- d) at least one relatively heavy musical string having its respective two ends affixed to said member; and,
- e) said at least one relatively heavy musical string being looped around said end pin means for carrying sound vibrations from said member to the end pin means which recycles the vibrations back into the violin body to thereby add to and amplify string vibrations,

10 thereby enabling the violin playing strings to vibrate with reduced bowing effort while enabling an increase in dominance, in distance of sound projection and capability to resonate,

10. A stringed instrument of the violin family, said instrument
15 having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, a bridge, playing strings played with a bow to provide musical vibrations, a sound post, a bass bar, a tailpiece, and end pin means, the improvement comprising,

20 a) an acoustic post formed as an elongated center shaft mounted in said chamber in lieu of said sound post;

b) at least two blades comprising acoustic wings mounted on said shaft with the broad plane of said blades being parallel to the axis of said shaft and extending outwardly from said shaft; and

5 c) said at least two blades mounted to project in opposing directions relative to one another from said shaft axis to, whereby said blades or acoustic wings function to absorb and retransmit sound vibrations developed in said chamber which sound vibrations may have heretofore been lost.

10 11. Apparatus as in claim 10 wherein said acoustic post comprises four blades symmetrically mounted on said shaft.

12. Apparatus as in claim 10 wherein said acoustic post includes a plurality of blades extending from said shaft.

15 13. Apparatus as in claim 10 wherein said acoustic post comprises a plurality of blades extending from said shaft, selected ones of said blades being mounted to have their broad planes parallel to the axis of said shaft, and others of said blades being mounted at an angle to the axis of said shaft.

14. Apparatus as in claim 10 wherein said acoustic post includes a plurality of blades positioned to form a balanced configuration.

15. An acoustic post for a stringed instrument of the violin family,
5 said instrument having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, a bridge, playing strings played with a bow to provide musical vibrations, a sound post, comprising

- a) an acoustic post formed as an elongated center shaft for mounting
10 in said chamber in lieu of said sound post;
- b) at least two blades comprising acoustic wings mounted on said shaft with the broad plane of said blades being parallel to the axis of said shaft and extending outwardly from said shaft; and
- c) said at least two blades mounted to project in opposing
15 directions relative to one another from said shaft axis whereby said blades or acoustic wings function to absorb and retransmit sound vibrations developed in said chamber which sound vibrations may have heretofore been lost.

20 16. A stringed instrument of the violin family, said instrument

having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, playing strings played with a bow to provide musical vibrations, a sound post, a bass bar, a tailpiece, and end pin means, the improvement comprising,

5 a) a bridge (a Mercer bridge) comprising a wood member with a solid mass surface and with no apertures to interrupt sound vibrations;

b) said Mercer bridge having a contoured surface for conforming to the external surface of the top plate to have substantially full contact with said surface;

10 c) said Mercer bridge formed to have the grain of its wood be oriented perpendicular to the direction of said strings

whereby said Mercer bridge transfer sound throughout its entire surface area in contact with said top plate.

15 17. Apparatus as in claim 16 wherein said Mercer Bridge is free of any filigree apertures.

18. Apparatus as in claim 16 further including

20 a) at least one isolation notch formed intermediate at least two string placement indents

wherein said at least one notch tends to isolate the vibration of one string from the vibration of the other strings to thereby improve the purity of the sound.

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19. Apparatus as in claim 18 wherein said Mercer Bridge includes only a bass isolation notch

whereby the output of the tendency of the higher frequency strings to influence and speed up the lowest frequency string is reduced.

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20. Apparatus as in claim 18 wherein said Mercer bridge includes a bass isolation notch, a tenor isolation notch and a treble isolation notch.

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21. Apparatus as in claim 18 wherein said notches are symmetrical v-shaped notches approximately 3/8" inch in depth and approximately 3/16" in width.

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22. A bridge for supporting the strings of a stringed instrument of

the violin family, said instrument having a body including a top plate spaced

from a back by enclosed sides to form a chamber there between, a neck, playing strings played with a bow to provide musical vibrations,

a) said bridge (a Mercer bridge) comprising a wood member with a solid mass surface and with no apertures to interrupt sound vibrations;

5 b) said Mercer bridge having a contoured surface for conforming to the external surface of the top plate to have substantially full contact with said surface;

c) indents for supporting said strings; and

10 d) said Mercer bridge formed to have the grain of its wood be oriented perpendicular to the direction of said strings

whereby said Mercer bridge transfers sound throughout its entire surface area in contact with said top plate.

23. A stringed instrument of the violin family, said instrument
15 having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, a bridge, playing strings played with a bow to provide musical vibrations, a sound post, a tailpiece, and end pin means, the improvement comprising,

20 a) a bass bar comprising an elongated bar of wood contoured to mount on said back of top plate within said chamber; and

b) said wood bar being formed to have the grain of the wood oriented to be perpendicular to the axis of the strings whereby the vibrations are spread more fully along the top of the violin.

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24. Apparatus as in claim 23 wherein

- a) a surface of the bass bar is contoured to conform to the inner surface of said back; and
- b) a series of amphidome notches formed on the surface of the bar

10 contacting said back for providing minimal surface contact yet maintaining structural strength to said bar.

25. Apparatus as in claim 23 wherein said bass bar is formed of laminated members.

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26. Apparatus as in claim 23 wherein said bass bar comprises

- a) a first section having a first elongated surface for contacting said back, and a outer shoulder centered to extend outwardly from the opposed surface;
- b) a second section having a first elongated contoured surface, a

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recess centered in said second section, said recess extending inwardly from said first contoured surface, and tabs extending outwardly from said second section, said tabs being in substantially the same plane as said section;

- c) spacing gaps formed at the ends of said recess;
- 5 d) said outer shoulder positioned in said recess with a spacing formed between said shoulder, and said recess and gaps to span said two sections; whereby the area spanning said first and second sections provides a vibrating area for easy start of vibration movement and to maximize the absorption of vibrations.

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27. Apparatus as in claim 23 wherein the bass bar is made of laminated material.

28. A bass bar for a stringed instrument of the violin family, said instrument having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, a bridge, playing strings played with a bow to provide musical vibrations,

- 15 a) said bass bar comprising an elongated bar of wood contoured to mount on said back and within said chamber; and
- 20 b) said wood bar being formed to have the grain of the wood

oriented to be perpendicular to the axis of the strings

whereby the vibrations are spread more fully along the top of the violin.

5 29. A stringed instrument of the violin family, said instrument having a body including a top plate spaced from a back by enclosed sides to form a chamber there between, a neck, a bridge, playing strings played with a bow to provide musical vibrations, a sound post, a bass bar, a tailpiece, and end pin means, the improvement comprising,

10 a) a harmonic device comprising a playing string receiving member comprising two separate pieces positioned as a tailpiece;

 b) receptacles in said member pieces for receiving said playing strings, each of said pieces receiving two playing strings;

 c) a relatively heavy musical string having its ends affixed to 15 respective ones of said pieces;

 d) string adjusters on said member pieces for respectively engaging and adjusting said playing strings;

 e) said musical string being looped around said end pin means for 20 carrying sound vibrations from said member pieces to said end pin means to thereby recycle the vibrations back to the violin body to thereby add to and

amplify string vibrations;

- f) an acoustic post formed as an elongated center shaft mounted in said chamber substituted for said sound post;
- g) said acoustic post having at least two blades comprising
- 5 acoustic wings mounted on a shaft with the broad plane of said blades being parallel to the axis of said shaft and extending outwardly from said shaft;
- h) said at least two blades mounted to project in opposing directions relative to one another from said shaft axis and said blades or acoustic wings function to absorb and retransmit sound vibrations developed
- 10 in said chamber which sound vibrations may have heretofore been lost;
- i) a bridge (a Mercer bridge) comprising a wood member with a solid mass surface and with no apertures to interrupt sound vibrations;
- j) said Mercer bridge having a contoured surface for conforming to the external surface of the top plate to have substantially full contact with said
- 15 surface;
- k) said Mercer bridge formed to have the grain of its wood be oriented perpendicular to the direction of said strings;
- m) a bass isolation notch formed in said Mercer bridge to reduce the tendency of the higher frequency strings to influence and speed up the
- 20 lowest frequency string; and

n) a bass bar contoured to conform to the inner surface of said back enabling said bass bar to transfer sound throughout its entire surface area to said top plate

o) apparatus part as in claim 29 with bass bar acoustic device
5 comprising of an outer perimeter acoustic area and having a vibrato area of very thin material whereby providing an area for easy start of vibration movement ;

p) starting vibrations in the acoustic rudder which is caused to vibrate by said outer perimeter area to then couple these vibrations to the
10 upper violin top plate which thereby causing the vibrations to go to the outer area then to the acoustic rudder and then to the upper violin plate thereby enhancing the sound vibrations

30. A stringed instrument as in claim 1 wherein the bass bar and an outer perimeter acoustic area extending from the bass bar are provided with a
15 thin vibrato area and acoustic rudder area that are formed from a single piece of wood.

whereby said violin playing strings vibrate with reduced bowing effort while enabling an increase in dominance, in distance of sound projection and capability to resonate to thus improve the sound produced by
20 the violin